Ramadan & Pregnancy

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Introduction

Ramadan is the ninth month of the Muslim calendar during which Muslims abstain from food and water from *Fajr* (the morning prayer) to *Magrhib* (the sunset prayer). The timing of this month is based on the lunar calendar so the length of the days can vary greatly from year to year depending on if it falls in the winter or the summer. Fasting during Ramadan is one of the five pillars of Islam and is *fard* (obligatory) for all Muslims physically and mentally capable of doing so. This presents a unique challenge for pregnant Muslim women as repeatedly abstaining from food and water for long periods of time may harm the fetus. Essentially, the question is one of competing obligations; do pregnant Muslim women fast as it is fard or abstain for fear of harming the fetus?

The real life applications of this question became far more evident when I encountered a case while working at Trinity Hospital. As a phlebotomist I routinely draw blood and on one particular day I received an order to draw on a baby in the neonatal intensive care unit (NICU). Upon arriving, I found the baby quite distressed, underweight and very weak. The nurse explained that the baby's mother was a young Muslim woman who had been fasting throughout Ramadan and the days prior to delivery. Furthermore, the nurse elaborated that as a result of the mother's fasting schedule, no glucose throughout the day accompanied with high glucose intake at night due to the *iftar* (the meal that breaks the fast), the baby was having trouble controlling

glucose levels. The baby's inability to control glucose intake led to serious bouts of both hypo and hyperglycemia placing the baby at risk for developing diabetes. Witnessing these problems firsthand, I realized the real need for a detailed and precise answer to this problem of competing obligations in the Muslim world.

To answer such a question requires a great deal of exploration of both the physiology of pregnancy and Islamic law. However, prior to delving into either of these topics I would like to make it abundantly clear that in Islam religion is not to be taken to the extremes in such a manner as to cause any harm: "And strive for Allah with the striving due to Him. He has chosen you and has not placed upon you in the religion any difficulty" (Quran 22:78). This verse in conjunction with others (5:6, 2:185) and numerous *Hadiths* (sayings of the Prophet) such as the following:

> "Narrated Abu Huraira: A Bedouin urinated in the mosque, and the people rushed to beat him. Allah's Messenger ordered them to leave him and pour a bucket or a tumbler (full) of water over the place where he has passed urine. The Prophet then said, " You have been sent to make things easy (for the people) and you have not been sent to make things difficult for them.'" (Sahih Al-Bukhari Book 78, Hadith 155 via sunnah.com)

Make it clear that fasting during Ramadan is not truly obligatory for those that it would cause unnecessary difficulty. Unfortunately, this does not solve the problem for Muslim women as the line for what constitutes difficulty and harm to the fetus or to the woman herself is quite blurred and varied depending on numerous variables such as, but not limited to, the term in which fasting occurs, length of the fast and the general health of the mother. The true complexity of this question does not lie in absolute yes or no answers but rather in the realm of *if* this has the *ability* to cause harm should one fast or not? It is this grey area that requires elucidation from both physiological and Islamic bioethical perspectives**.** Essentially, the solution will come down to a handful of issues such as the definition of harm, the actual harm, and prioritizing prima facie obligations. Furthermore, to reach any conclusion on these issues will obviously require the use

of the Quran and Hadith alongside opinions from the *Sahabah* (companions of the Prophet) as well as juristic reasoning. Each of these sources is used differently and given varying levels of importance depending on the specific Islamic school of thought.

Islamic Jurisprudence

There are two major branches of Islam, Sunni and Shia, each with their own schools of law that have a different approach to Islamic jurisprudence. There are four major Sunni schools, Hanafi, Hanbali, Maliki and Shafi, and there is one major Shia school, Jafari. It is important to note that even within each school of thought there are varying opinions and the *mashuur* (dominant) opinion is usually regarded as the 'opinion of the school' (Jaziri and Roberts XXIV).

All four schools of Sunni thought place the most emphasis on Quran and hadith so the differences between them occur when Quran and hadith are ambiguous or silent on a given issue. Additionally, in regards to hadith the four Sunni schools regard six books as authentic in order of authenticity: Al-Bukhari, Muslim, Abu Da'ud, Al-Tirmidhi, Al-Nasa'i, and Ibn Maja. Out of these six books Al-Bukhari and Muslim are considered the most true and any contradiction from the other four goes in favor of these two. When ambiguity occurs each school has a preferential order for what to consider following the Quran and hadith.

The Hanafi School refers to, in order, *ijima* (consensus and opinions of the Sahabah), individual opinions of the Sahabah (non-consensus), *qiyas* (analogy), *istihsan* (preference), and lastly local custom (Ramadan 26).

The Hanbali School follows the same order of preference as the Hanafi School until it deviates at the individual opinions of the Sahabah. After individual opinions, the Hanbali School examines weaker hadiths and originally they rarely resorted to qiyas but modern Hanbalites

utilize qiyas more liberally. The Hanbali School is unique in that it refuses to acknowledge the use of jurists' personal opinion or deduction to form religious conclusions but, again, modern Hanbalites are somewhat more liberal in this regard (Ramadan 24-29).

The Maliki School follows a fairly different prioritization. Following the Quran and Hadith, the Maliki School uses *amal* (customs of the people of Medina), ijima, individual opinions of the Sahabah, qiyas, *istislah* (public interest), and finally *urf* (customs of Muslims in general) (Ramadan 26-27).

The last Sunni school of law, Shafi, utilizes three sources after the Quran and Hadith, in order: ijima, individual opinions of the Sahaba, and qiyas. The Shafi School rejects the use of istihsan and istislah due to their complete lack of basis in Quran or Hadith citing these methods as purely human conjectures (Ramadan 28).

The Shia school of law, the Jafari School, differs widely from the previous Sunni schools in one major regard: human reason. The Jafari School utilizes four sources of law from the Quran, Hadith, ijima (the Sahaba), and *ijtihad* (individual/human reason). The Jafari School believes that anything that can come from pure or practical reason is a by-product of revelation and should therefore be considered religiously binding. It is also worth mentioning that the Jafari School of thought is more liberal with their usage of hadith and not as limited to the six major Sunni books of hadith (Ramadan 29).

It is important to examine the meaning of a few of the preceding terms as they are used in Islamic law. Ijima refers to consensus of scholars, however, certain schools of thought (such as the Jafari) use ijima to refer to consensus by a specific group of people like the Sahaba. Therefore, simply because two schools utilize ijima does not mean they are utilizing the same form of ijima as it can refer to specifically consensus of the Sahaba, scholars or certain

generations of Muslims. Qiyas is the use of deductive analogy that utilizes a specific set of rules to come to a new conclusion; it does not give full reign for scholars to abstractly analogize hadiths or Quranic verses. Istihsan is literally "approval" or "considered good" but in Islamic legal terminology refers specifically to juristic preference. This means that jurists are able to use this to decide alternative interpretations from strict and literal interpretations of the Quran. Istislah is literally "to deem proper" and is used in Islamic legal terminology to refer to the public good or interest. This means that laws and rulings should serve the greater public interest. Additionally, the use of istislah is permitted only when in regards to non-religious observances involving necessities examples of which would be things like organ transplants and blood transfusions. Lastly, urf refers to customary *unwritten* law as opposed to mandated legal doctrine within localities. Urf falls into three categories: how common people maintain order, social interaction, and local business customs (*Oxford Islamic Studies Online*).

The opinions of the four Sunni schools of thought on fasting while pregnant are very similar with few subtle differences. The Hanafi and Hanbali Schools hold that if a pregnant woman feels she may harm herself or her child she may refrain from fasting so long as she makes the days up at a later time. The Maliki School agrees with the Hanafi and Hanbali School but adds that if the mother fears *mortal* harm to herself or the child then she is *required* not to fast (Jaziri and Roberts 768). The Shafi School states that if a mother fears *any* harm to her child or herself she is *required* not to fast and must make up the remaining days at a later time (Jaziri and Roberts 768-769).

Rulings for the Jafari School of thought come from *mujtahids*, which are people who have attained an immense, level of knowledge and reasoning in the Islamic tradition. Sunni Muslims prescribe mujtahid status only to the original four founders while Shia Muslims believe

that mujtahids continue to come forward and guide the *ummah* (Muslim community). In modern day Shia Islam one of the greatest living mujtahids is Ayatollah Sistani who ruled that, in the case of pregnancy, women are not obligated to fast if "… for whom fasting is harmful or for the child she carries" (Al-Sistani). One should note that in the Jafari School 'harm' refers not just to injury but also the very fear of harm itself. Therefore in this case the Jafari School, through the Grand Ayatollah, rules that fasting is not obligatory for pregnant women if there is harm or even fear of harm to herself or the child.

These rulings are interesting in that they provide precise instructions for what one should do in the event that harm is caused but they ultimately leave one completely clueless because they never define harm. The closest of these schools to define harm is the Maliki School and they simply distinguish between life and death. So is harm simply the lack of water causing temporary dehydration? Is harm referring to insufficient nutrients such that the child is now in danger of being born preterm and underweight? The vagueness and ambiguity in the wordings of these statements make it seem that this is almost done intentionally. Notice that all four schools begin conditionally with "if the woman feels/fears" as if purposely leaving the definition of harm up to the individual. In the case of Hanafi, Hanbali and Jafari School followers this poses little problem, as both require no obligation to refrain from fasting. Maliki School followers will also be affected little due to obligatory abstention from fasting is necessitated only in cases of mortal danger. Followers of the Shafi School will find themselves in quite the predicament, as any consideration of harm is an obligation to avoid fasting. Regardless of which school they follow, Muslim women will still have to ask themselves when is fasting, if ever, harmful? I refuse to believe that the answer to such a question is simply up to the whimsy of the individual such that one could be accused of essentially "gaming the system" so as to avoid fasting. The point I am

trying to make is that no Muslim should have to feel that they are avoiding an obligation rather than being properly excused from that obligation. It should not be a matter of shame or laziness but rather one of, relatively, well defined guidelines.

One prominent author in the field of Islamic bioethics, Adulaziz Sachedina, takes to explaining the boundaries and definition of harm in his essay "No Harm, No Harassment". Sachedina utilizes urf to come to the conclusion that if customs declare an action harmful then it is and if not then it is not regardless "if the matter is lexically designated as 'harmful'" (Sachedina 282). This means that even if the action or term literally means to induce harm if local custom disagrees then it is not harmful. For example, in the United States pranking friends as a lighthearted and fun joke is a common 'custom' but the literal definition of prank is 'a malicious or mischievous act'. A malicious or mischievous act literally means an act of evil or evil intent but with Sachedina's rule the local custom of a prank prevails.

Sachedina continues that even though local custom might define the parameters for harm the individual, subjective experience should not be ignored: "Harm is relative to the person who experiences it…Human experience, although subjective, attains considerable importance in the evaluation of the kind of harm that is to be rejected in the rule of "No harm, no harassment." (Sachedina 282). The basis for the importance given to the consideration of the subjective experience is, Sachedina says, due to the context of the Hadith's of the Prophet. Ultimately, Sachedina concludes that humans can only strive to do their best in defining harm, as God knows best. Clearly, to delve deeper into this specific discussion of harm requires a very precise examination of the physiological and anatomical progression of pregnancy.

Biology

> We created man of an extraction of clay, then We set him, a coagulated drop, in a safe lodging, then We created of the coagulated drop a leech-like clot, then We created of the clot a morsel of tissue, then We created of the tissue bones, then We covered the bones in flesh; thereafter We produced him as another creature. So blessed be God, the best of creators— Quran, 23:11-14

Colloquially, pregnancy is usually divided into trimesters, first, second, and third, however this distinction is not entirely accurate for discussing specific changes to the fetus. Rather the fetus undergoes six distinct phases: gametogenesis, fertilization, cleavage, gastrulation, body plan formation and organogenesis (Sandler and Langman 2006). The first of these phases, gametogenesis, is simply the formation of germ line cells within the male and female—the process of forming eggs and sperm. This phase occurs well prior to conception.

The following phase, fertilization, is when the egg and sperm meet. However, before the sperm can fertilize the egg it must undergo two processes 1) capacitation and 2) the acrosome reaction. Capacitation is the removal of the external glycoprotein layer of the sperm head allowing for greater binding to the egg. The acrosome reaction occurs after this initial binding and in it the acrosome, the head of the sperm, releases two digestive enzymes, acrosin and trypsin, allowing for the sperm to fully penetrate the egg. The female egg consists of three primary layers, which the sperm must penetrate: corona radiate, zona pelucida and the oocyte membrane. Once the spermatocyte breaches the final layer and enters the oocyte, the oocyte undergoes the second meiotic division forming the female pronucleus and bars any additional sperm from entering. Additionally, the head of the spermatocyte separates from the tail forming the male pronucleus. Together, the female and male pronuclei, are known as the zygote. Both pronuclei are haploid and so must undergo DNA replication after which they intermingle and proceed through mitotic division giving rise to the two-cell stage (Sadler and Langman 2006).

Once the two-cell stage is reached the third major phase is triggered: cleavage. Cleavage is the mitotic division that results in smaller cells referred to as blastomeres. After three divisions blastomeres become compacted into little balls with inner and outer layers. These compacted blastomeres then divide further into a solid 16-cell ball referred to as a morula. It is important to address a few matters in regards to the time line here. The previously mentioned phases occur within the first week of pregnancy. At this specific moment, the morula is formed and actually enters the uterus around the third or fourth day of pregnancy (Sadler and Langman 2006).

As a slight digression, the most sensitive of blood or urine tests used to check for pregnancy look for the hormone hCG, human chorionic gonadotroponin, which is elevated only after implantation of the embryo in the uterus. Therefore, since the morula does not even enter the uterus until three or four days post conception earliest detection is only possible at about eight to fourteen days (Carlson and Piranit 2014). The point of this digression is to stress the uncertainty of whether or not a woman knows she is pregnant for the first week of the pregnancy.

Continuing with the development of the fetus, as the morula makes its way into the uterus a cavity begins to appear and the blastocyst forms. The blastocyst is divided into two parts the inner and outer cell masses. At this point, all these aforementioned processes occur during the first week of pregnancy. The outer cell mass will go on to form the trophoblast which will eventually become the placenta providing nourishment to the fetus. The inner cell mass will become the actual embryo/fetus itself.

The cleavage phase then continues into the second week, which is known as the week of twos. This nickname refers to the vast amount of differentiation that occurs during the second week of pregnancy. The trophoblast differentiates into two layers the cytotrophoblast and the syncytiotrophoblast. The cytotrophoblast is an actively expanding layer that is essential for

proper implantation of the embryo to the uterus. The syncytiotrophoblast helps form the vascularization necessary to establish the placenta and by the end of the second week a primitive uteroplacental circulation to provide nourishment has been established. The inner cell mass also differentiates into two portions the epiblast and the hypoblast. These two portions will give rise to three layers that form the organs and skeletal system. Additionally, the formation of two cavities begins in the second week the amniotic and yolk sac cavities (Sandler and Langman 2006).

This ends the cleavage phase and begins gastrulation, which is the formation of the three primary germ layers: ectoderm, mesoderm and endoderm. This usually begins around the start of week three. Additionally, in week three the endoderm provides the basis for the prenotochordal cells and the prechordal plate leading to the formation of the notochord, which is the basis for the midline axis and the axial skeleton (trunk/head) (Sandler and Langman 2006). The formation of the notochord is the beginning of the fifth phase—body plan formation.

Now that a body plan has been formed the final phase of development begins: organogenesis. Organogenesis is also referred to as the embryonic period and it usually occurs between the third and eighth weeks of pregnancy. As the name suggests, this period is marked by the development of all major organ systems and tissues. Each of the three previously formed germ layers will give rise to specific portions of the body. The ectoderm will thicken and undergo neurulation forming the central and peripheral nervous systems, components of the skin, enamel, sweat and pituitary glands. The endoderm forms the lining of the respiratory and gastrointestinal tracts and the urinary bladder. Additionally, it forms the parenchyma (functional tissue) of the parathyroid, thyroid, liver and pancreas. Finally, the mesoderm is composed of three distinct portions the paraxial, intermediate and lateral each of which differentiates into a

type of connective tissue. The paraxial mesoderm gives rise to somitomeres, which form the mesenchyme (connective tissue) of the head and produce somites. Somites then produce a variety of connective tissues such as myotome (muscle tissue), sclerotome (cartilage/bone) and dermatome (skin tissue). The intermediate mesoderm forms urogenital and reproductive systems while the lateral mesoderm forms the vascular system. After organogenesis is complete, around the two-month mark, all major organ systems will have been established and the body of the embryo will have discernible human features (Sandler and Langman 2006).

From the eighth week to birth there is no more 'new' development of the fetus as all major body systems have been established. Rather the remaining seven months of the pregnancy are for rapid maturation and growth. In months three, four and five the length of the fetus grows rapidly at about five centimeters per month while in the final two months weight gain is far more rapid at approximately 700 grams per month (Sadler and Langman 2006). Full term pregnancies with healthy newborns result in a birth weight between 3000 (6.6 lbs) and 3400 (7.5lbs) grams. Additionally, the CDC defines low birth weight as a baby under 2500 grams (5.5 lbs) and on the opposite end of the spectrum high birth weight in excess of 4000 grams (8.82 lbs) ("PedNSS Health Indicators" 2009).

With an established foundation of the physiological and anatomical progression of pregnancy, we can begin to examine nutritional guidelines for pregnant women. Nutrition is an extremely varied topic with a multitude of vitamins, minerals, and chemicals that can be discussed especially in the field of teratogenics. Therefore, in an effort to narrow the discussion I have decided to limit the examination of nutritional guidelines to a handful of vitamins and minerals that play an important role in pregnancy: vitamins A, B6, B2 (riboflavin), B12, C, folate/folic acid, zinc, and magnesium. It is important to note that the nutrients being examined

here are the ones whose needs grow the most during pregnancy as well as being important for the pregnancy. Lastly, in addition to these nutrients protein, carbohydrate, glucose and energy intake will have to be taken into account.

Table 1. Dietary Reference Intakes for Women[ab]

Nutrient	Adult woman	Pregnancy	Lactation (0-6 mo)
Energy (kcal)	2,403	2,743[c], 2,855[d]	2,698
Protein (g/kg/d)	0.8	1.1	1.1
Carbohydrate (g/d)	130	175	210
Total fiber (g/d)	25	28	29
Linoleic acid (g/d)	12	13	13
α-Linolenic acid (g/d)	12	13	13
Vitamin A (μg RAE[e])	700	770	1,300
Vitamin D (μg)	5	5	5
Vitamin E (mg α-tocopherol)	15	15	19
Vitamin K (μg)	90	90	90
Vitamin C (mg)	75	85	120
Thiamin (mg)	1.1	1.4	1.4
Riboflavin (mg)	1.1	1.4	1.6
Vitamin B-6 (mg)	1.3	1.9	2.0
Niacin (mg NE[f])	14	18	17
Folate (μg dietary folate equivalents)	400	600	500
Vitamin B-12 (μg)	2.4	2.6	2.8
Pantothenic acid (mg)	5	6	7
Biotin (μg)	30	30	35
Choline (mg)	425	450	550
Calcium (mg)	1,000	1,000	1,000
Phosphorus (mg)	700	700	700
Magnesium (mg)	320	350	310
Iron (mg)	8	27	9
Zinc (mg)	8	11	12
Iodine (μg)	150	220	290
Selenium (μg)	55	60	70
Fluoride (mg)	3	3	3
Manganese (mg)	1.8	2.0	2.6
Molybdenum (μg)	45	50	50
Chromium (μg)	25	30	45
Copper (μg)	900	1,000	1,300
Sodium (mg)	2,300	2,300	2,300
Potassium (mg)	4,700	4,700	5,100

[a]Data from reference 22 (Institute of Medicine. *Dietary Reference Intakes: The Essential Guide to Nutrient Requirements* Washington, DC: National Academies Press; 2006).
[b]Values are Recommended Dietary Allowances except for energy (Estimated Energy Requirement) and total fiber, linoleic acid, α-linolenic acid, vitamin D, vitamin K, pantothenic acid, biotin, choline, calcium, manganese, chromium, sodium and potassium (Adequate Intakes).
[c]Second trimester for women age 19 to 50 years.
[d]Third trimester for women age 19 to 50 years.
[e]RAE=retinol activity equivalents.
[f]NE=niacin equivalents.

As highlighted in the figure above the recommended daily guidelines for important nutrients is, as expected, far greater for pregnant versus non-pregnant women. Increased energy, protein, and carbohydrate intake is fairly self-explanatory—as the fetus grows it requires more energy, which stems from carbohydrates and protein for building amino acids, DNA, hormones etc. Vitamin A plays an essential function in the development of the immune system and is collected by the fetus for hepatic storage during the third trimester (Azais and Gerard 2000).

Deficiencies in Vitamin A have been shown to increase the likelihood of morbidity for premature babies as immune system vulnerability is increased (Azais amd Gerard 2000). Vitamin C (ascorbic acid) helps with tissue repair and bone growth additionally promising new research indicates that vitamin C deficiency may lead to mental health impairment for the fetus (Tveden-Nyborg et al. 2012). Vitamin C also plays a critical role in iron absorption therefore deficiencies may present with complications generally associated with iron deficiency such as preeclampsia or anemia (Hallberg, Mats and Rossander 2014). Iron deficiency anemia during pregnancy is a serious condition as it can result in stunted mental development of the child. Riboflavin (vitamin B2) deficiency has been associated with certain congenital heart defects and limb deformities (Smedts et al. 2008). Vitamin B6 plays an essential role in the establishment of the central nervous system and the brain, which begins to occur from the third week of pregnancy (Salam et al. 2015). Therefore deficiency in Vitamin B6 may result in mental and nervous impairment with highest susceptibility occurring in second and third trimesters.

Folate or folic acid is central to fetal development as it is essential for nucleic acid synthesis, which is necessary for cell division and replication (Scholl, Theresa and William 2000). Due to its role, folate is especially important during the first few weeks of pregnancy, as this is when the neural tube is formed. Therefore deficiency in folate can lead to serious neural tube defects the two most common being spina bifida and anencephaly (Green and Andrew 2014). The former is a condition in which the spine fails to form properly resulting in exposure of the spinal cord and/or meninges often leading to mobile impairment and mental retardation. The latter is a condition in which the brain and parts of the skull are either partially formed or entirely nonexistent. Additionally, folate deficiency may result in hyperhomocystenemia (elevated homocysteine levels) for the mother, which is strongly associated with cardiovascular

disease, psychiatric illness and adverse bone health. Magnesium has a variety of roles in human biology, as it is an important enzyme activator and cofactor in a myriad of biochemical reactions. Magnesium deficiency is therefore indicative of a wide range of effects from low birth weight, temperature dysregulation and SIDS, sudden infant death syndrome (Durlach et al. 2002).

In addition to the previously noted complications, iron deficiency anemia also poses a problem for fetal circulation. Iron helps bind oxygen to hemoglobin and the lack of iron will result in less oxygen meaning the fetus will also face hypoxia. Oxygen is necessary for human cells as it acts as the final electron acceptor in oxidative phosphorylation which is the process allowing for energy production. Zinc, like magnesium, is necessary as a cofactor for proper enzymatic functions and therefore problems due to deficiency are broad and variable such as: preterm/premature birth, low birth weight, and inhibited immune system function.

The aforementioned dietary requirements and conditions associated with deficiency must be examined in light of deficiency caused by fasting. This data as an experiment in of itself is not widespread therefore I will be utilizing experiments whose results may not be specifically in accord with the purpose of this paper but otherwise demonstrate nutrient data for fasting individuals. Due to the variety of experiments from which I have derived this data it is important to note units will vary quite significantly. Some units prove to be incomparable to the previously stated nutritional guidelines and in these cases, when possible, I have compared them within their own experiments to their own non-fasting comparisons.

The following table is from a study published in the American Journal of Obstetrics and Gynecology showing the effect of fasting on carbohydrates, protein, folate, vitamin C, iron and zinc (Herrmann et el. 2001). This study provides an interesting examination of fasting on blood metabolites as it compares two different periods of pregnancy as well as two different lengths of

fasting. In light of this paper these variables roughly correlate to different length of Ramadan fasting with summer fasting being over 13 hours and winter fasting being less than 13 hours.

Table V.
Differences between women in BIPS who fasted for ≥13 hours versus <13 hours during two different trimesters of pregnancy

	Time 1 (18-20 wk) (n = 237)		Time 2 (28-30 wk) (n =236)	
	≥13 h (n = 112)	<13 h (n = 125)	≥13 h (n = 98)	<13 h (n = 138)
Trait				
High stress level	27	23	31	25
Actively exercised on day of study (%)	7	5	4	9
Experienced hassles on day of study (%)	34	33	16	23
Ate on day of study (%)	81	85	88	79
Dietary intake				
Energy (kcal)*	1625 ± 48.7†	1829 ± 52.5	1619 ± 50.7†	1831 ± 55.1
Lowest quartile of energy (%)	30‡	21	36‡	25
Caffeine intake (mg)§	13.3 ± 3.0†	24.3 ± 5.1	13.7 ± 3.1	17.5 ± 4.1
High caffeine intake (>200 mg/d) (%)	2‡	3	1‡	3
Carbohydrate (g)§	123.2 ± 2.0†	129.3 ± 2.2	124.2 ± 2.7	128.9 ± 2.0
Protein (g)§	44.3 ± 1.0†	41.5 ± 0.9	43.0 ± 1.2	42.5 ± 0.8
Fat (g)§	37.6 ± 0.7	36.8 ± 0.8	37.9 ± 0.9	36.4 ± 0.8
Folate (μg)§	154.1 ± 7.6	168.5 ± 8.7	158.9 ± 9.3	164.0 ± 7.2
Vitamin C (mg)§	61.4 ± 5.5	71.8 ± 5.2	66.9 ± 4.8	68.7 ± 4.3
Iron (mg)§	8.6 ± 0.4	8.3 ± 0.3	8.1 ± 0.4	8.2 ± 0.3
Calcium (mg)§	447.7 ± 18	478.1 ± 17	435.1 ± 21†	526.9 ± 18
Zinc (mg)§	6.0 ± 0.2	6.0 ± 0.2	5.7 ± 0.2	5.8 ± 0.2

*Mean ± SEM. †*P* <.05 when compared with women who have prolonged periods without food <13 hours. ‡Relative risk changes by ≥30% compared with women who have prolonged periods without food <13 hours. §Adjusted for energy intake (nutrient/1000 kcal).

Note that these units are in some form of grams per a specified unit of 1000kcal so to garner a full daily value these measurements must be multiplied by the median kcal value for each column as I have done in the following table. The recommended value for each nutrient is given in parentheses except for protein. The provided guideline for protein intake is 1.1 grams per kilogram per day (g/k/d) and therefore it is difficult to compare with this data. We can, however, gain a very rough approximation of the necessary protein intake by utilizing the Center for

Disease Control's (CDC) reports on mean weight of females in the United States. This national health survey, conducted between 2007 and 2010, placed mean female weight of those aged 20 and over at 75.4 kilograms placing an approximate necessary protein intake at 75 grams (Fryar 7).

	Time 1 (18-20 wk) ≥13 h	Time 1 (18-20 wk) <13 h	Time 2 (28-30 wk) ≥13 h	Time 2 (28-30 wk) <13 h
Carbohydrates (175 g)	200.2 g	235.9725 g	201.0798 g	236.0159 g
Protein	71.985 g	75.9035 g	69.617 g	77.8175 g
Folate (600 µg)	250.4125 µg	308.1865 µg	257.2591 µg	300.284 µg
Vitamin C (85 µg)	99.775 µg	131.3222 µg	108.3111 µg	125.7897 µg
Iron (27 mg)	13.975 mg	15.1807 mg	13.1139 mg	15.0142 mg
Zinc (11 mg)	9.75 mg	10.974 mg	9.2283 mg	10.6198 mg
Kcal Value (in thousands)	1.625	1.829	1.619	1.831

Based on the value-adjusted table above, we can see that the length of the fast makes a sizable difference between daily nutritional values. However, this sizable difference was not enough to make a difference between daily intake being over or under recommended levels. Additionally, the term of pregnancy made little to no difference on the nutrient levels after fasting. Overall, carbohydrate, vitamin C and protein can be reasonably seen as having been very sparsely effected by fasting while the main deficits were in levels of folate, iron and, to a slight extent, zinc.

The most concerning of these findings is the incredible deficiency found in folate levels due to how severely folate deficiency can effect the fetus. This in light with our previous digression regarding pregnancy detection and the neuralation/neural tube formation timeline hints at the very real danger for Muslim women. These women, unbeknownst to the fact that they are pregnant, might fast resulting in only half their allotted folate intake per day and this would be coupled with repeated days of fasting. In the early stages of pregnancy this could be utterly devastating for the fetus resulting in anencaphly and spina bifida. The presented deficit in iron is also quite worrisome for pregnant women as the daily nutrients are, again, cut almost in half regardless of the length of the fast (over/under 13 hours). The final visible deficiency is in zinc,

which poses the least problem of the three deficient nutrients, as fasting intake seems to only slightly dip below recommended values.

Unfortunately, in regards to the remaining nutrients for B and A vitamins and magnesium there is insufficient data in the literature regarding the effects of fasting on their blood serum levels. However, there is still a basis from which to understand and analyze these nutrients as will be explained in the following discussion regarding the variable nature of this investigation.

It is important to understand that even with clinical reference ranges for nutrients and having a frame of reference for understanding the effects of fasting on nutrient levels the amount of variability in this examination is prodigious. For example, the daily recommended intake values provided by the WHO are not unanimously decided there are other variable recommended values from sources such as the National Research Council (NRC) and Institute of Medicine

(IOM) as in the following table from 2000:

TABLE 1
Recommended dietary allowances and intakes for adolescent girls; nonpregnant, nonlactating women; and pregnant women[1]

Nutrient	Adolescent girls			Nonpregnant, nonlactating women			Pregnant women (3rd trimester)			Percentage increase over nonpregnant, nonlactating women: pregnant women[2]
	NRC, 15–18 y	IOM, 14–18 y	FAO/WHO, 15–19 y	NRC, 25–49 y	IOM, 19–50 y	FAO/WHO, 18–60 y	NRC	IOM	FAO/WHO	
										%
Calcium (mg)[3]	1200	1300	500–600	800	1000[4]	400–500	1200	1000[4]	1000–1200	140–150
Phosphorus (mg)	1200	1250	—	800	700	—	1200	700	—	—
Magnesium (mg)	300	360	—	280	310–320	—	320	350–360	—	—
Iron (mg)	15	—	—	15	—	—	30	—	—	—
Very low bioavailability[5]	—	—	60	—	—	59	—	—	179–299	203–407
Low bioavailability[5]	—	—	32	—	—	32	—	—	92–152	187–375
Medium bioavailability[5]	—	—	16	—	—	16	—	—	46–76	187–375
High bioavailability[5]	—	—	10	—	—	11	—	—	31–61	182–454
Zinc (mg)[6,7]	12	—	1.5	12	—	1.4	15	—	2.0	43
Iodine (μg)[6]	150	—	150	150	—	150	175	—	200	33
Selenium (μg)[6]	50	—	21.5	55	—	21.5	65	—	27	26
Copper (mg)[6]	—	—	1.15	1.5–3.0[8]	—	1.15	1.5–3.0[8]	—	1.15	0
Vitamin A (μg RE)[5]	800	—	600	800	—	500	800	—	600	20
Vitamin D (μg)[9]	10	5[4]	100	5	5[4]	2.5	10	5[4]	10	300
Vitamin E (mg α-TE)	8	—	—	8	—	—	10	—	—	—
Vitamin K (μg)	55	—	—	65	—	—	65	—	—	—
Vitamin C (mg)[9]	60	—	30	60	—	30	70	—	50	67
Thiamine (mg)[10]	1.1	1.0	0.9	1.1	1.1	0.8	1.5	1.4	0.9	12
Riboflavin (mg)[10]	1.3	1.0	1.4	1.3	1.1	1.4	1.6	1.4	1.5	7
Niacin (mg NE)[10]	15.0	14.0	11.9	15.0	14.0	11.5	17.0	18.0	12.6	10
Vitamin B-6 (mg)	1.5	1.2	—	1.6	1.3	—	2.2	1.9	—	—
Folate (μg)[5]	180	400	170	180	400	170	400	600	370–470	118–176
Vitamin B-12 (μg)[5]	2.2	2.4	1.0	2.0	2.4	1.0	2.2	2.6	1.4	40

[1] NRC, National Research Council (33); IOM, Institute of Medicine (34, 35); FAO/WHO, Food and Agriculture Organization of the United Nations/World Health Organization; RE, retinol equivalents; α-TE, α-tocopherol equivalents; NE, niacin equivalents.
[2] Percentage increase is based on the FAO/WHO values.
[3] Values in the FAO/WHO columns are from reference 36.
[4] Adequate intake.
[5] Values in the FAO/WHO columns are from reference 37.
[6] Values in the FAO/WHO columns are from reference 38.
[7] Zinc concentrations for adolescent girls and nonpregnant, nonlactating women are based on normative requirement × representative body weight.
[8] Estimated safe and adequate dietary intake.
[9] Values in the FAO/WHO columns are from reference 39.
[10] Values in the FAO/WHO columns are from reference 40.

Note that even in the short span of seven years the WHO changed their recommendations quite significantly.

Even if these set ranges and effects of fasting could be agreed upon the variability from person to person would still place any authoritative statement on fetal health under great stress. For example, vitamins and trace elements can be divided into two distinct categories: water-and fat-soluble. The difference between these is that fat-soluble are available for long-term storage

while water-soluble nutrients will be filtered out through the kidneys fairly quickly. There are only four fat-soluble vitamins (A, D, E and K) while the rest of the vitamins and trace elements are water-soluble. The question of how long/quickly fat-soluble vitamins will replenish deficiencies or how quickly water-soluble nutrients will leave the body is reliant upon studying basal metabolic rates. Basal metabolic rates vary greatly from person to person and factors attributing to these differences are still a matter of great debate (Johnston et al. 2005). Furthermore, utilization of vitamins and trace elements can change drastically based on family history and genetic makeup of the individual not to mention prevalence of other diseases or chronic illness.

Studies have been conducted on expounding the effects of maternal fasting during pregnancy using a variety of methods for assessing fetal health. Currently physicians utilize a variety of different tests during different times in pregnancy to evaluate fetal health. In the first trimester there are usually ultrasound tests and maternal blood tests but these are usually screening for genetic abnormalities and do not really pertain to nutritional deficiencies. The second semester provides a bit more range of clinical testing as amniocentesis, testing of the amniotic fluid, is possible. The amniotic fluid is testable for certain biochemical markers, such as alpha-fetoprotein, indicative of fetal health with the ability to detect complications such as neural tube defects. Final trimester testing is based on a fetal biophysical profile (BPP) a non-invasive ultrasound technique which takes into account five major factors: 1) fetal breathing movements 2) fetal gross body movements 3) fetal tone 4) reactive fetal heart rate 5) amniotic fluid index (AFI). Each component is scored from 0 to 2 for a total score of 10 with higher scores presenting more favorable outcomes.

Numerous studies have been conducted using the fetal BPP, and its components, as a means of determining effects of fasting and there are a variety of different conclusions. A study by Khalaf et al. reported in the Middle East Fertility Society Journal in 2015 showed that one of the components of the fetal BPP, the AFI, might be positively affected by fasting specifically during Ramadan (Khalaf et al. 2015). An alternative study by Abd-El-Aal et al. reported in the International Journal of Gynecology in 2009 concluded, specifically in regard to Ramadan fasting, that "[fasting] has a transient but significant effect on maternal serum glucose levels and fetal behavior" (Abd-El-Aal et al. 2009). This study, however, failed to make any claims as to the nature of these "transient but significant" effects in regards to their positive or negative value. Another study by Mirghani et al. reported in the same journal in 2003 concluded "the biophysical profile of the fetus is significantly reduced by maternal food and water deprivation during Ramadan." (Mirghani et al. 2003).

Even within these studies the use of the fetal BPP as a definitive or holistic method of determining fetal health is controversial with numerous studies in favor and opposing. A study done in 2008 by Lalor et al. in the Cochrane Database concluded that the fetal BPP was an ineffective marker for high-risk pregnancies (Lalor et al. 2008). While another study done in 2010 by Bano et al. in the Professional Medical Journal concluded that "the fetal BPP appears to be an effective technique for assessment of fetal condition." (Bano, Uzma and Sahid 2010). There is little consensus on the definitive effectiveness of the fetal BPP as an indicator of suboptimal practices in pregnancy while its clinical use is lauded as a beneficial tool for further physician examination. While there are many studies examining overall fetal health markers and even certain nutrients during fasting, there are few, if any, studies thoroughly examining specific vitamin and trace element levels during successive, prolonged periods of fasting.

The purpose of explaining the highly variable nature of this topic is not to discredit the previous examination or evade a conclusion but rather to impress upon how little there is actually known about this topic. The reality of the medical field is that even the most basic of guidelines are up for debate and practice varies from physician to physician. This issue is not one of just moral grey areas but also scientific uncharted territory. Overall, nutritional and scientific data provide little conclusive evidence that fasting can harm the fetus nor does it provide significant evidence that it does not harm the fetus.

Conclusion

To make any Islamic decision or juristic ruling there has to be a foundational methodology and process from which one utilizes information. We have already seen the various methodologies utilized by the major schools of thought in Islam; however, in this specific case of Ramadan and pregnancy I propose a different foundation. Obviously, I agree that the Quran and hadith (following the hierarchy of the six books) should be the basis for all decisions and justification in Islam. I diverge on the issue of utilizing ijima, qiyas and urf specifically in the context of this case.

Ijima refers to consensus whether it is of the Sahabah or the scholars of Islam. The current problem with ijima is the sheer volume of scholars and sources available on any given Islamic question compiled with the reliability of these sources. Yes, the former problem can be reconciled by realizing that majority consensus is the spirit of ijima not total consensus. The latter problem is, however, far more difficult to address, how do we ascertain the reliability of scholars worldwide? With so many sources available from so many different institutions how does one determine whether or not sources are not simply cherry picking their own facts? At this

point, how do we then decide who is or is not a scholar? We then find ourselves embroiled in the same problem of cherry picking our sources and scholars to achieve pseudo consensus to fit personal agendas. It is because of the pitfalls of ijima that consensus of modern scholars should not be taken for granted rather it is something that requires a great deal of examination which is beyond the scope of this project. On the other hand, the consensus of the Sahabah remains pure and true to Islam as it does not pose issues of fallible sources. Unfortunately, there is no definitive consensus among the Sahabah from which to draw upon for this particular case. Therefore, in my methodology I refuse to utilize ijima of modern scholarship without further examination, which is, again, beyond the scope of this project.

The absence of qiyas from my methodology for this specific case is fairly simple as the need for analogy is unnecessary. The need for analogy in Islamic law is for cases, which are not found in hadith or Quran, but this case deals with such broad terms and definitions that utilizing analogy to come to any conclusion would be superfluous. Additionally, as previously mentioned qiyas utilizes a precise set of rules which in of themselves require a vast and detailed knowledge of the Quran and Hadith a kind of knowledge only present in those having thoroughly studied Islamic jurisprudence. Therefore, in addition to my previous objections, I do not believe I am qualified to abstractly analogize and make rulings based on, what amounts to, formal ijtihad.

Lastly, the issue of urf, local custom, is problematic in this case, as custom does not dictate biology. Simply put, harm in this case is not something that can vary from custom to custom, as there are tangible, physical measurements and indicators of harm regardless of their current contestability in scientific literature. Even though science has difficulty in finding the exact parameters of what constitutes harm and when these are issues which cannot change widely from custom to custom as they are inherent in biology.

In place of ijima, qiyas and urf I propose an emphasis on istislah and istihsan, in that order. Istislah is to only be used in cases of non-religious observances; however, the unique nature of this problem is such that it intertwines medical necessity, a non-religious observance, with Ramadan, a religious observance. Therefore, I find it permissible to utilize istislah as a hermeneutic to evaluate the legality of fasting during Ramadan. Lastly, istihsan is necessary, as the high variability of this case inherently necessitates juristic flexibility.

I would also like to specifically discuss the opposition and lower order preference assigned to these two hermeneutic techniques in Islamic jurisprudence. The supposed inferiority of these techniques is due to their heavy reliance on ijtihad, which has been a historically controversial hermeneutic method for the Muslim community. Around the 10th century, the Muslim society decided that ijtihad was no longer necessary or valid as anything "that could be deduced or extracted through ijtihad already had been deduced or extracted." (Ramadan 20). Following this informal moratorium on ijtihad, the principle of *taqlid* ("rigid conformity" or "blind following") was tacitly adopted. Essentially, taqlid is the practice of strictly relying on previous rulings and interpretations alongside the Quran and Hadith. After the Tartar invasion and fall of the Abbasid Caliphate controlled capital of Baghdad in 1258 CE the Iraqi scholars began formally prohibiting ijtihad (Ramadan 21). These scholars hoped that by disallowing ijtihad it would preserve the guiding principles of Islam (Ramadan 21).

Many modern Islamic scholars have vehemently opposed the banning of ijtihad. Allama Mohammad Iqbal, a scholar from the University of Cambridge and regarded as starting the Pakistan Movement leading to the independence and creation of modern-day Pakistan, stated in his famous work *The Reconstruction of Religious Thought In Islam*:

> "The closing of the door of Ijtihad is pure fiction suggested partly by the crystallization of legal thought in Islam, and partly by that intellectual laziness which, especially in the

> period of spiritual decay, turns great thinkers into idols…modern Islam is not bound by this voluntary surrender of intellectual independence." (Iqbal 141)

In addition to scholarly opposition, there are numerous Hadiths that unambiguously lend authenticity to the use of ijtihad such as the following found in Sahih Muslim:

> "Amr b. al-'As reported that he heard Allah's Messenger (ﷺ) as saying:
> When a judge gives a decision, having tried his best to decide correctly and is right, there are two rewards for him; and if he gave a judgment after having tried his best (to arrive at a correct decision) but erred, there is one reward for him." (Sahih Al-Muslim Book 30, Hadith 18 via sunnah.com)

In this Hadith the Prophet acknowledges the use of individual reason, ijtihad, by the judge but emphasizes that the intention must be to have tried their utmost to reach the correct decision. Even with the overwhelming body of evidence and support for ijtihad the major Sunni schools of law have been very slow to allow for it as exemplified by the low status of istislah and istihsan.

It may seem contradictory to devalue qiyas partially on the basis of ijtihad yet allow for the use of istislah and istihsan. However, qiyas is a far more formal and methodological form of ijtihad whereas istislah and istihsan are more informal types of ijtihad. Therefore, to utilize qiyas requires a level of understanding that surpasses my own abilities whereas istislah and istihsan remain within my purview. Herein lies another, in my opinion, overlooked limitation and problem with istislah and istihsan. The informal nature prevalent within these two hermeneutic methods presents a mode of corruptibility similar to that of ijima. Any individual can, under the guise of istislah and istihsan, manipulate the Quran and Hadith to fit their own agenda, as there are no formal guidelines. Therefore, any rulings derived using these methods should be thoroughly grounded within the Quran and Hadith such that the logic is entirely evident. Lastly, I would like to impress upon the reader that any interpretation or judgment (including my own) founded upon either of these juristic methods should be examined thoroughly in light of the author and surrounding context.

Before delving into evidential Quranic verses and hadith, I would like to note that the scope and breadth of this project is such that I am unable to cover the entirety of the Quran or even a large portion of the body of Hadith. In light of this fact the reader should be well aware that this is not a full review of the Quran or hadith. I am, however, examining what I believe to be the most pressing Quranic verses and hadiths on the subject of Ramadan and fasting.

Let's start by examining the relevant Quranic verses on fasting and harm. The first such verse comes from Surah Al Baqarah: "O ye who believe! Fasting is prescribed to you as it was prescribed to those before you, that ye may (learn) self-restraint- (fasting) for a fixed number of days; but if any of you is ill, or on a journey, the prescribed number (should be made up) from days later…" (Quran 2:183-184). So from this verse it is absolutely clear that fasting is not meant to be for those that are ill or traveling but these fasts must be made up later. In the following verse Allah once again emphasizes: "…So every one of you who is present (at his home) during that month should spend it in fasting but if anyone is ill, or on a journey, the prescribed period (should be made up) by days later. Allah intends every facility for you; he does not want to put you to difficulties…" (Quran 2:185). After prescribing fasting the immediate follow up is to remind the reader that Allah does not wish for *any* difficulty in fact Allah wishes *every facility* for the believer. While powerful, these verses simply echo the sentiments made earlier regarding the idea that Allah wishes no harm for His adherents. The question again remains how does one define harm?

We must examine, more broadly, the idea of harm within the Quran. In the same Surah, Al-Baqarah, there is another verse that sheds some light on harm: "They ask thee concerning wine and gambling. Say: 'In them is great sin, and some benefit, for men; but the sin is greater than the benefit.'" (Quran 2:219). This verse provides a very interesting metric by which to

examine harm. Allah says that even though there might be benefit one must realize that the harm (sin) is greater and so it should be avoided. Essentially, this verse allows one to evaluate an action in light of its harms and benefits and choose the more beneficial path. As a slight aside, in context this verse may seem to allow moderate drinking/gambling but these are strictly prohibited by other verses (4:43; 5:90).

Together the previous verses allows us to understand two major concepts: 1) Allah does not wish to cause difficulty 2) the believer is to choose the option that is most beneficial/least harmful to them. The former is a fairly simply edict to understand but the latter places us in, essentially, the same predicament as before: how does one weigh the harms and benefits especially in such an ambiguous case? At best, scientific measurements conclude that the possibility of harm from maternal fasting is present but definitive judgments evade the scientific community.

Without definitive answers from either the Quran or Hadith the next step is to consider the principles of istislah and istihsan. Approaching these methods, we must consider two factors 1) the health of the mother and 2) the health of the fetus. In the case of istislah, I imagine that no one would contest that both the health of the mother and fetus should, in a perfect world, remain unharmed and unencumbered by fasting. So in the case of public good the idea should be to preserve the health of both mother and child, as it would be detrimental to society to harm either. In the case of istihsan, preference should be given to that ruling which allows the best outcome for both the mother and fetus. It is clear that these last two methods are unable to elucidate a definition for harm and simply provide us with solutions that cannot be derived.

Having exhausted the Quran, Hadith and all applicable juristic methods it is time to realize that perhaps defining the parameters of harm is not feasible. Instead we should proceed

with what we currently do understand both scientifically and Islamically. Islamically, we know that the Quran and Hadith provide us with the ability to choose that which is most beneficial and to avoid that which is harmful/sinful even in the case that that which is harmful might have some benefit. Additionally, the juristic principles of istislah and istihsan inform us that the result of these decisions should serve to preserve the health of the mother and child as best as possible. Scientifically, we do not fully understand the effects of fasting on the fetus. In light of these facts it should not be the boundaries of harm that Muslims should strive to understand rather realizing the limits of our knowledge we should proceed with caution. Therefore, it is my recommendation that pregnant Muslim women should strongly reconsider fasting during Ramadan.

Fasting is to be undertaken with the intention of serving Allah and should not, as Allah says, cause a burden on any individual. The Quran and Hadith provide an interesting perspective on the idea of intention in relation to judgment. In the same Surah previously quoted, Al-Baqarah, the Quran states: "Allah will not call you to account for thoughtlessness in your oaths, but for the intention in your hearts; and He is Oft-Forgiving Most Forbearing." (Quran 2:225). Allah states quite clearly that the action is almost irrelevant but rather people will be judged by what they intended to do. A Hadith found in Sahih Bukhari reaffirms this idea:

> "Narrated `Umar: I heard the Prophet (ﷺ) saying, 'The reward of deeds depends on the intentions, so whoever emigrated for the worldly benefits or to marry a woman, his emigration was for that for which he emigrated, but whoever emigrated for the Sake of Allah and His Apostle, his emigration is for Allah and His Apostle.'" (Sahih Bukhari Book 63, Hadith 124 via sunnah.com)

Here we have the same idea; the Prophet explains that the reward of an action is far more dependent on one's intention. The purpose of discussing intention here is to note that those who, while pregnant, fast intend to do so for their own benefit. It is a personal religious obligation that one is choosing to undertake solely for their benefit with little to no regard for the other life

present. In this case, the intent to fast is a rather selfish action especially in light of the limited information of the adverse outcomes for the fetus. Is it not the height of narcissism to complete one's own religious obligations even though it may have devastating consequences for another?

This may seem like a rather harsh criticism, and it is, but note the verse from Surah Al-Ma'ida:

> "On that account: We ordained for the Children of Israel that if anyone slew a person—unless it be for murder or for spreading mischief in the land— it would be as if he slew the whole people: and if anyone saved a life it would be as if he saved the life of the whole people…" (Quran 5:32).

This often quoted verse reflects the severity with which Islam denounces the murder of another individual likening the murder of one to that of the entirety of a race. As a slight digression, the verse specifically states the Children of Israel which some have taken to mean that it does not apply to Muslims— this is entirely inaccurate. The Children of Israel are considered descendants of Abraham who is known in Islam as Ibrahim. Ibrahim was considered the leader of many nations and in Surah Al-Baqarah verse 124 Allah confirms Ibrahim's status as "Imam to the nations" meaning this verse applies to all Muslims (Quran 2:124). The implication here is that the severity of harming another is not trivial and should be taken seriously. Therefore, the very fear of harm should be more than enough for any pregnant Muslim woman to abstain from fasting.

I do not believe that one can go so far as to call it an obligation to abstain from Ramadan, as it is one of the compulsory acts prescribed by God. However, I firmly believe that with the inconclusive scientific data available to Muslim women that the only way to proceed is with the utmost caution. This decision will not be definitively decided until such a time that science is able to conclusively, or with great certainty, prove that fasting during Ramadan is either harmful or harmless to a pregnant woman and her child. In the end, as Muslims we must realize that it is

our intentions that truly matter and so any decision taken should be with the purest of intentions as the rest is up to Allah: “So when you have finished your occupation, devote yourself for Allah’s worship. And to your Lord alone turn all your intentions and hopes.” (Quran 94:7-8).

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